

## **C-5 RELIABILITY ENHANCEMENT AND RE-ENGINEERING PROGRAM (RERP)**



### **Air Force ACAT ID Program**

Total Number of Systems:	126
Total Program Cost (TY\$):	\$6B
Average Unit Cost (TY\$):	\$45-55M
Full-rate production:	FY05

### **Prime Contractor**

Lockheed Aero

### **SYSTEM DESCRIPTION & CONTRIBUTION TO JOINT VISION 2020**

The current C-5 fleet operates throughout the Active, Reserve, and National Guard components in various missions and environments. C-5 missions include strategic airlift, emergency aeromedical evacuation, airland of a brigade-size force in conjunction with other organic aircraft, transport of outsize and oversize cargo, and multi-ship Special Operations Low Level II. The C-5 aircraft must perform missions at night and in adverse weather, and it may employ aerial refueling during intercontinental missions.

The C-5 Reliability Enhancement and Re-engining Program (RERP) will dramatically change the aircraft propulsion system. It will integrate commercial engines, nacelles, thrust reversers and pylons into the existing C-5 airframe. These performance improvements will optimize cargo carrying capabilities, allowing fully loaded take-offs and landings on relatively short runways, and will allow the C-5 to meet the performance requirements of the Global Air Traffic Management initiative. Additionally, re-engining is expected to provide significant Reliability, Maintainability and Availability improvements. A commercial engine support concept (two levels of maintenance, warranties, power by the hour, etc.) will be integrated into the C-5 logistics support system infrastructure.

Other candidate sub-systems for reliability enhancement include the flight controls, hydraulics, environmental, electrical, and fuel systems. Specific upgrades and the extent of the expected reliability improvement will be identified during the trade studies planned in FY01.

The C-5 was developed and procured prior to the implementation of LFT&E statutory requirements. Therefore, the basic aircraft has never completed a live fire evaluation. The RERP modification is an ACAT I program and constitutes a covered program for LFT&E. (Note - The January 2000 Oversight List designated C-5 RERP for DT and OT oversight but not for LF.)

Lockheed Martin is the prime contractor and has overall integration responsibility. Lockheed selected General Electric as the power plant subcontractor and BF Goodrich as the pylon subcontractor. The C-5 RERP supports the concepts of *dominant maneuver* and *focused logistics* for *Joint Vision 2020*.

### **TEST & EVALUATION ACTIVITY**

A TEMP is being developed to support a Milestone II decision for the C-5 RERP in December 2000. No QT&E or OT&E has been conducted to date. Only preliminary test planning has occurred thus far. DOT&E has been an active participant in the development of the TEMP, in the review and revision of the acquisition strategy, and in the DOD IPT process.

Fiscal Year 2000 LFT&E activity focused on identifying potential LFT&E issues, developing an LFT&E strategy, and updating the TEMP to incorporate LFT&E requirements. To support development of the LFT&E strategy, the Air Force is conducting modeling and simulation. Several models are being used, namely, FASTGEN (Fast Shotline Generator), COVART (Computation Of Vulnerable Area and Repair Time), MOSAIC (Modeling System for Advanced Investigation of Countermeasures), SPIRITS (Spectral and In-band Radiometric Imaging of Targets and Scenes), and FISTA (Flying IR Signatures Technology Aircraft). Submittal of a draft updated TEMP with a LFT&E strategy is expected in early FY01 following the Milestone II decision. We will support a request for a waiver from full-up, system-level testing since testing a complete, combat configured system would be unreasonably expensive and impractical. We anticipate that an adequate alternative LFT&E plan will be developed.

### **TEST & EVALUATION ASSESSMENT**

The schedule risk for the C-5 RERP development and test programs is moderate to high. The C-5 RERP test program is dependent on the success of the C-5 Aircraft Modernization Program (AMP), which is avionics and software intensive. Any slip in the C-5 AMP program schedule will impact the schedule of the C-5 RERP since the single engineering and manufacturing development aircraft will be a modified C-5B from the C-5 (AMP) test program. In addition, the current acquisition strategy does not include the modification and test of a C-5A even though there are 76 A-model aircraft (including two special configuration aircraft) and only 50 B-models. Further review of this acquisition strategy is scheduled.